Sandia National Laboratories
Pollution Prevention Plan

May 1997

SANDIA NATIONAL LABORATORIES
POLLUTION PREVENTION PLAN APPROVAL

Approved: _____ _____

Thomas E. Blejwas, 7500 **Date**
Director
Environmental Operations Center

_____ _____

Rick Wayne, 8400 **Date**
Director
National Security and Environmental Technology

Recommended:

_____	_____	_____	_____
James G. Yeager, 7526 **Manager** **Line Support, P2 and Environmental Programs**	**Date**	**Jim Bartel, 8418** **Manager** **Environmental Operations**	**Date**
_____	_____	_____	_____
Kylene J. Molley, 7526 **Pollution Prevention Site Coordinator for SNL/NM**	**Date**	**Sally Raubfogel, 7526** **Pollution Prevention Site Coordinator for SNL/CA**	**Date**

_____ _____

John A. Sayre, 01403 **Date**
Department Manager
Chair
Pollution Prevention Team

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Approved: _____ _____
Ron Dobbs **Date**
Pollution Prevention Coordinator
Department of Energy
Kirtland Area Office

_____ _____
Jocelyn Siegel **Date**
Pollution Prevention Coordinator
Department of Energy
Albuquerque Office

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1.0 INTRODUCTION

The Pollution Prevention (P2) Program is a central element in the Sandia National Laboratories (SNL) Environmental Safety and Health (ES&H) management strategy, and day-to-day laboratory operations. The P2 Program was developed to change the corporate culture by including pollution prevention practices into everyday activities and tasks. As a result, reducing or eliminating the generation of waste becomes an integral part of the philosophy and operations of the laboratories.

This Plan documents the P2 Program at Sandia National Laboratories, satisfying the requirements of Department of Energy (DOE) Order 4500.1 and the DOE Pollution Prevention Program Plan (DOE/S-0118). The Plan provides programmatic guidance: specifying strategies, activities, and methods that will be employed to reduce the quantity and toxicity of waste and pollutants, conserve energy and resources, and purchase products with recycled content.

This Plan is organized as follows:

Section 1.0 provides an overview of the SNL operations, the SNL P2 program, and the regulations and policies that mold the SNL program.

Section 2.0 describes the SNL organizations and programs that are part of the P2 program, their responsibilities and how they interact.

Section 3.0 contains SNL's quantitative source reduction and recycling goals and the activities that will be conducted to meet these goals. The section is structured according to the 18 activities identified in the DOE P2 Program Plan that all sites should perform. The text describes how SNL will implement each of these activities.

Section 4.0 lists the reporting requirements of the SNL P2 program.

Section 5.0 is a summary of the P2 plan and includes a table of proposed activities to be conducted during the next three years to achieve the goals and objectives of the P2 program.

Section 6.0 contains the references used to develop this plan.

To promote paperless communication and increase awareness, SNL maintains a P2 HomePage on the Sandia Internal Web. Information such as P2 requirements, corporate goals, guidance, technical assistance documents, and success stories are posted. Details on the P2 HomePage are found in section 3.12. In the text of this Plan the reader is referred to the HomePage for additional supporting information, and the Plan itself will be posted on the HomePage with links to those references. Because the present HomePage is located on SNL's internal Web and is not universally accessible, all information referenced to the HomePage in this plan is included in the appendices.

1.1 Scope

The SNL P2 program is a multimedia program and applies to all pollutants generated by both routine and non-routine SNL operations. The term pollutants includes air emissions, wastewater discharges, hazardous waste (HW), mixed waste (LLMW), Transuranic (TRU) waste, low-level radioactive waste (LLW), and sanitary waste (SW). In addition, the program scope includes promoting waste minimization, source reduction, recycling, resource and energy conservation, and affirmative procurement. This plan applies to operations and associated support activities at all SNL sites, including Albuquerque, New Mexico (SNL/NM) and Livermore, California (SNL/CA). If SNL operations are conducted at a site hosted by an entity other than SNL, the P2 policies and plans established by the prime contractor at that site shall apply.

1.2 Legal and Policy Background

Pollution prevention concepts first appeared in the Resource and Conservation Recovery Act (RCRA). An expressed concern was to minimize the generation of hazardous waste through process substitution, materials recovery, recycling, reuse and treatment. It established the reduction or elimination of hazardous waste as national policy, and required that hazardous waste generators and RCRA permit holders have a program in place to minimize waste.

The Pollution Prevention Act of 1990 expanded on RCRA formulating the following policy:

> "The Congress hereby declares to be the national policy of the United States that pollution should be prevented or reduced at the source whenever feasible; pollution that cannot be prevented or reduced should be recycled in an environmentally safe manner whenever feasible; pollution that cannot be prevented or recycled should be treated in an environmentally safe manner whenever feasible; and disposal or other release into the environment should be emphasized only as a last resort and should be conducted in an environmentally safe manner".

In addition the Act directed the U. S. Environmental Protection Agency (EPA) to implement this statute, and develop a comprehensive pollution prevention strategy.

Other key pieces of environmental legislation also incorporate pollution prevention. Pollution prevention language contained in selected federal and state legislation, executive orders and DOE orders are attached in Appendix A, and can be found on the SNL P2 HomePage, under "Drivers for Pollution Prevention/Waste Minimization."

Two key documents which directly affect operations at SNL are DOE Order 5400.1 and Executive Order (E.O.) 12856. DOE Order 5400.1, General Environmental Protection Program, establishes environmental protection program requirements and responsibilities, and institutes the requirements for opportunity assessments. This Order requires Waste Minimization Program Plans, an Annual Waste Reduction/Minimization Report, and a Pollution Prevention Awareness Program. E.O.

12856 requires compliance with the Pollution Prevention Act, Emergency Planning and Community Right to Know Act (EPCRA) reporting requirements and affirmative procurement practices.

DOE issued the Pollution Prevention Program Plan of 1996 as "the principal crosscutting guidance to DOE Headquarters, Operations Office, laboratory, and contractor management to fully implement pollution prevention within the DOE complex between now and 2000."

The DOE Pollution Prevention Program Plan establishes DOE's Pollution Prevention mission, as follows:

> " The Department's pollution prevention mission is to minimize the generation and release of pollutants to the environment by implementing cost-effective prevention technologies, practices, and policies with partners in government and industry. The Department will simultaneously conduct its operations in such away as to minimize the impact on the environment, improve the safety of operations and energy efficiency, and promote the sustainable use of natural resources".

The DOE Pollution Prevention Plan identifies 18 activities that each site should conduct as part of their P2 program. Each of these activities is addressed in section 3.0.

The DOE, Kirtland Area Office (DOE/KAO) Pollution Prevention Policy Statement and the DOE Albuquerque Operations Office (DOE/AL) Pollution Prevention Plan incorporate and implement Federal and State regulations, Executive Orders, and DOE Orders.

The SNL P2 plan addresses each of these levels of requirements and guidance, and presents a specific strategy for implementing P2 within the corporation. The first SNL P2 plan was submitted in 1992, and revised in 1994. This 1997 revision of the plan complies with DOE Order 5400.1, which requires a yearly review and a complete revision every three years.

The State of California has additional P2 requirements. The SNL/CA P2 program must comply with CA Senate Bill 14, Source Reduction Management Act, Senate Bill 1728, and CA Assembly Bill 939.

1.3 Site Information, Description and Operations

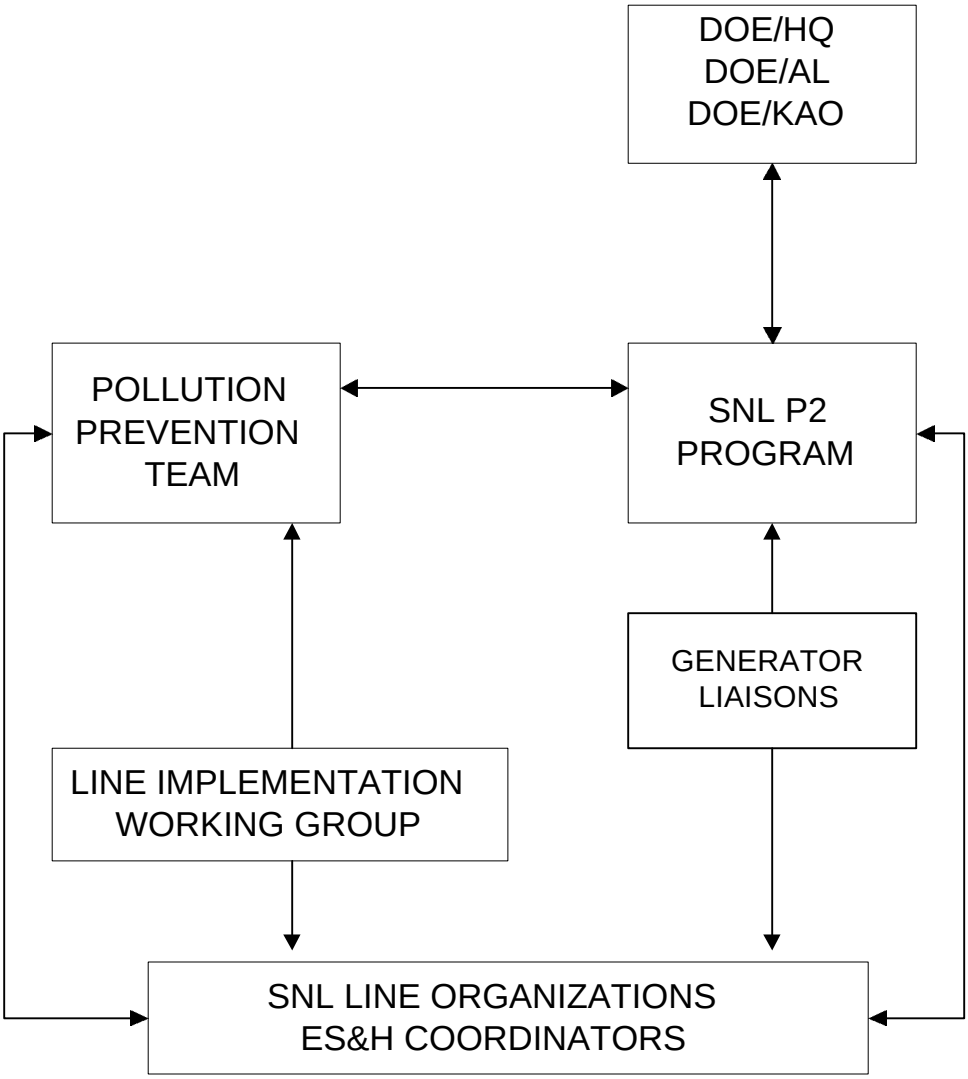
SNL is a federally funded national laboratory that provides engineering and science services to ensure the security of our nation through nuclear deterrence. SNL is one of the national defense laboratories whose purpose is to supply the nation's needs in national security (both nuclear and non-nuclear) and provide research for new energy sources. Since the end of the Cold War, SNL's mission has greatly expanded to include leading edge research and development (R&D) technologies in electronics, computer systems, energy, robotics, advanced military technology, arms control and non-proliferation. SNL receives assignments primarily from DOE, its principal customer, and when appropriate, the Department of Defense (DOD).

Current projects at SNL include the weaponization of nuclear explosives, including the design of arming, fusing, and firing systems used in nuclear weapons, nuclear reactor safety studies for the United States Nuclear Regulatory Commission (USNRC), development of safe transport and storage systems for special nuclear materials including plutonium and uranium, and radioactive waste site characterization studies and disposal techniques. SNL also conducts research in pulsed power nuclear reactors, thermonuclear fusion, solar energy, environmental technologies, and fossil fuel and geothermal energy sources. Safely managing nuclear weapons and ensuring the reliability of weapons systems receive primary emphasis at SNL.

2.0 PROGRAM ORGANIZATION AND STRUCTURE

The P2 program is structured to offer technical support and to develop the corporate infrastructure to assist line organizations in the identification and implementation of cost-effective pollution prevention projects. Also, as a DOE funded site, SNL shall implement a DOE compliant P2 program, and track and report progress to DOE , as requested.

The SNL P2 program is structured to address these multiple responsibilities, as shown in Figure 1. The boxed items are the functional units within the P2 program and the arrows indicate the information flow. Organizations which support the P2 program are listed at the bottom of the figure. A functional unit is an organization through which information flows and decisions are made affecting the P2 program at SNL. A supporting organization is one whose primary function is not P2, but whose activities support the P2 program at SNL. Each of the functional units and the support organizations in this section.



Sandia Support Programs :

Waste Operations
Materials Exchange
Procurement
Chemical Inventory
Regulatory Support

Figure 1. SANDIA NATIONAL LABORATORIES POLLUTION PREVENTION PROGRAM

2.1 Department of Energy

The DOE, Albuquerque Office (DOE/AL) is responsible for administering the pollution prevention program at SNL. DOE, Kirtland Area Office (DOE/KAO) provides direct oversight and is the interface between DOE/AL and SNL. The function of DOE/AL and DOE/KAO is to:

- Transmit and interpret requirements from DOE, Headquarters (DOE-HQ).
- Transmit required reports to DOE/HQ.
- Provide guidance, direction and funding for the pollution prevention program
- Ensure SNL complies with pollution prevention requirements

2.2 SNL P2 Staff

The SNL P2 program staff is a line support organization, consisting of SNL and contractor professionals with expertise in waste reduction technologies. The leads for the P2 staff at SNL/NM and SNL/CA are designated as the site P2 coordinators. The P2 coordinators are responsible for coordinating all P2 activities, serving as the interface between DOE and the site. Some of the specific services offered to the line organizations by the P2 staff include:

- Conduct Pollution Prevention Opportunity Assessments (PPOAs) or informal P2 consultations on selected processes or waste streams to identify P2 opportunities.
- Provide technical assistance re. P2 implementation (i.e., research of potential product substitution, process changes, P2 technologies, and P2 products).
- Conduct cost-benefit analyses for P2 opportunities.
- Identify and obtain implementation funding for P2 projects.
- Create a corporate infrastructure to support P2 activities.
- Identify recycling opportunities and coordinating recycling efforts.
- Support and participate on the P2 team
- Support and participate on the Affirmative Procurement (AP) team.
- Track and report waste generation.
- Recognize accomplishments and promote an awareness for P2.
- Administer the Generator Set-Aside Fee (GSAF) program (SNL/NM only).
- Compile information and complete reports to DOE, , state and federal regulatory agencies, SNL management, and line organizations.

2.3 SNL P2 Team

The goal of the P2 Team is to be the corporate champion for pollution prevention and to motivate, help, and enable all Sandians to incorporate P2 into all activities. Membership is composed of personnel from both the line organizations and the pollution prevention program organizations.

The objectives of the P2 Team are:

- Establish metrics for the SNL P2 program
- Create an award/recognition program
- Develop and own a process to garner successes in P2
- Coordinate and integrate activities of the SNL P2 program
- Advocate the advantages of including P2 in the programs and processes at SNL
- Champion at least one corporate annual event that highlights P2 activities and successes at SNL
- Interface with teams performing P2 related activities throughout SNL and establish a process to maintain the interface
- Compare R&D facilities to learn the best practices for P2 at R&D facilities
- Administer and evaluate policy for the GSAF program
- Effect a culture where all Sandians are aware of and at least 80% take active steps to avoid pollution

The P2 Team meets at least monthly to discuss and decide on site-wide issues. A list of the current P2 Team members and meeting minutes are published on the P2 HomePage.

2.4 Line Implementation Working Group (LIWG)

LIWG is a forum that uses quality principles to anticipate, coordinate, negotiate, and improve the efficient and successful implementation of ES&H requirements throughout Sandia. LIWG is a communication link between, and a partner with the Line and ES&H support organizations. Its members consist of delegated representatives from SNL divisions, sectors, bargaining units and ES&H support organizations. LIWG meets weekly to discuss various ES&H issues that affect line organizations and recommend solutions. LIWG functions as a sounding board for site-wide P2 initiatives. A LIWG member, assigned as P2 Champion, coordinates activity between the P2 Team and LIWG, and represents SNL P2 interests at LIWG meetings.

2.5 Environmental Safety and Health Coordinators

ES&H coordinators represent SNL divisions and centers. They assist their organizations in implementing and complying with all applicable ES&H programs and regulations. The ES&H Coordinators are responsible for disseminating information to

the line organizations, and representing the interests of their individual organization. They are the initial contact for communication with the line organizations regarding P2 issues.

2.6 Generator Interface Liaisons (SNL/NM only)

Generator Interface Liaisons are environmental professionals whose function is to advise and assist line organizations with environmental issues to ensure regulatory compliance. The ES&H center, organization 7500, maintains the Generator Interface team. Individual team members, liaisons, are matrixed to line organizations. The liaisons work closely with ES&H coordinators, line staff and other ES&H professionals to identify opportunities for the identification and resolution of environmental issues.

2.7 Line Organizations

The individual line organization is the key functional unit for the implementation and integration of the P2 program at SNL. Line organizations, with assistance from the P2 staff, the P2 Team, LIWG, their ES&H Coordinator and generator liaison, are responsible for:

- Review operating practices to identify areas of improvement.
- Evaluate and implement cost-effective, alternative practices to reduce pollution, maximize recycling, conserve resources and purchase recycled products.

2.8 Support Organizations

2.8.1 Waste operations

Waste operations at SNL is responsible for the safe handling, packaging, storage, treatment and shipment for disposal of waste. Waste operations is a general term. At SNL/CA, this includes the Waste Management and Maintenance Engineering departments. At SNL/NM, waste operations refers primarily to the Waste Management Department. Waste operations manages the recycling of many hazardous and non-hazardous wastes at SNL.

Additionally, Waste operations administers three reuse programs: Chemical Exchange Programs, the Lead Bank, and the Radioactive Source Bank, each of which is discussed separately in Section 3.6.

2.8.2 Materials Exchange Programs

The Materials Reapplication Service Department at SNL/NM and the Property Management Department at SNL/CA are responsible for administering Materials Exchange Programs, which coordinate the reapplication and reuse of excess SNL and DOE property to other SNL users, federal, state and local organizations, schools, and the public. SNL shall consider excess property as the first source of supply before

purchasing new items. Typical materials that are reapplied include computers, office supplies and equipment, and laboratory equipment.

In addition to its primary function of reapplying excess property, these departments also administer the recycling of scrap metals and used toner cartridges.

2.8.3 SNL Procurement

SNL Procurement is committed to obtaining high quality supplies in a cost-effective, timely and compliant manner. Supplies and services at SNL can be procured by one of the following methods: Just-in-Time (JIT) contracts, purchase requisitions and procurement cards. Contractors may also bring in and use materials to complete the scope of their work. Each of these purchases are subjects to the affirmative procurement requirements. SNL procurement, as directed in the prime contract, is responsible to:

- Provide support to activities that reduce procurement of hazardous materials.
- Implement an affirmative procurement (AP) program for EPA designated products that have a post-consumer recycled content.
- Give preference to closed loop procurement contracts.
- Track the purchases of items containing recycled content.

2.8.4 Chemical Inventory System

The Chemical Information System (CIS) is a joint SNL/NM-SNL/CA initiative to track all chemical received on site and transferred between chemical use/storage areas. It contains an extensive Material Safety Data Sheet (MSDS) library and chemical inventory system. The chemical inventory system tracks chemical containers by bar-code, and is linked to the MSDS system to provide information for various regulatory reports. It is also useful for targeting pollution prevention opportunities.

This system is fully implemented at SNL/CA. At SNL/NM, implementation of CIS began in FY96 and will be completed in FY98.

2.8.5 Regulatory Support

Both SNL/CA and SNL/NM employ environmental professionals with expertise in environmental regulations. The P2 staff, ES&H coordinators, and line organizations interface with these individuals, as needed, to ensure that P2 projects and activities are implemented in full compliance with applicable regulations.

3.0 PROGRAM GOALS AND ACTIVITIES

This section details SNL's P2 ongoing and proposed P2 efforts designed to achieve complete program implementation by CY 1999. This section is organized according to the 18 key activities DOE requires to be conducted according to its Activity Plan. The first activity, "Establish Senior Management Commitment", is critical to the

continued success of the SNL P2 program, and is necessary for the completion of the remaining activities. The second activity, "Set Quantitative Source Reduction and Recycling Goals", is essential to the P2 program. SNL has established ambitious corporate goals that support and, in most cases, exceed the Secretary of Energy's 1999 P2 goals. The remaining activities directly support achievement of SNL's goals.

3.1 Establish Senior Management Commitment

The SNL Environment, Safety and Health (ES&H) Manual states that "No job is more important than your health, your safety, and the protection of our environment." Concern and appropriate conduct in matters pertaining to ES&H are the responsibility of all SNL employees, on-site contractors, and visitors.

The SNL commitment to pollution prevention is consistent with the DOE Policy, Assistant Secretary for Defense Programs (DP) Policy, and the DOE Albuquerque Operations Office Policy on waste minimization and pollution prevention. SNL management is committed to achieve the level of personnel, budget, training, and materials to ensure that the objectives of the Pollution Prevention Program are met. In the letter transmitting its corporate P2 goals signed by SNL's executive vice-president, SNL reiterated its commitment to P2 by stating, "Sandia is committed to pollution prevention as a corporate initiative because of the potential to reduce waste generation, conserve resources, reduce health and safety risks, and create cost savings...Sandia will continue to practice pollution prevention for all operations that generate [routine and] nonroutine wastes."

3.2 Set Quantitative Source Reduction and Recycling Goals

In March 1996, SNL committed to corporate pollution prevention goals. The source reduction and recycling goals are developed using input from internal organizations, who evaluate their current and anticipated operations, waste generation rates, recycling practices, and affirmative procurement practices. The goals assume that SNL's understanding of future programs is correct. To address significant changes in program direction from the projections, the goals are revisited each year and revised as necessary.

With the exception of the recycling goals, these goals only apply to routine waste generation at SNL, and use calendar year 1993 as the baseline. SNL will continue to practice pollution prevention for all operations that generate nonroutine wastes, including environmental restoration, decontamination and demolition, and management of legacy waste. However, SNL believes that meaningful, quantitative, source reduction goals can not be set for nonroutine waste because generation rates are highly variable and difficult to project.

The SNL waste reduction and recycling goals through 1999 are summarized in Table 1.

Table 1. POLLUTION PREVENTION WASTE REDUCTION GOALS FROM 1997-1999 USING 1993 QUANTITIES AS A BASELINE

Cat.	Goal	1993 Baseline*	Projected 1997 Goals		Projected 1998 Goals		Projected 1999 Goals		By 12-31-99
		Qty or %	Qty	% Reduction	Qty	% Reduction	Qty	% Reduction	DOE Reduction Goals
R O U T I N E	Reduction of Toxic Chemical Release Inventory	N/A**							50%
	Reduction of Low-Level Radioactive Waste Generation	137.7	17.6	87	18.81	86	20	85	50%
	Reduction of Low-Level Mixed Waste Generation	5.39	2.65	51	2.65	51	2.65	51	50%
	Reduction of Hazardous Waste Generation	127.4	35.9	72	37.9	70	40	69	50%
	Reduction of Sanitary Waste Generation	21 234	1275	94	1388	93	1500	93	33%
A L L	Increase Sanitary Waste Recycling % = Recycled Amount x 100 / San. Waste + Recycled	8%		30%		31.5%		33%	33%
	Increase Affirmative Procurement of EPA-Designated Recycled Products	3%		60%		75%		100%	100%

* From 1994 Annual Report on Waste Generation and Pollution Prevention Progress

** Rad and mixed waste are in cubic meters; hazardous and sanitary waste are in metric tons
*** SNL releases unreportable amounts of TRI chemicals

3.3 Institute Performance Measures

To assess the success of the P2 program, performance measures must be developed, tracked and reported. The P2 staff are responsible for providing P2 progress information to DOE, SNL's senior management, and line organizations. Currently, the P2 staff provide quarterly waste generation reports to the line organizations through their ES&H coordinators. Real-time waste generation data is also available on the P2 Homepage for SNL. The P2 staff also provide monthly progress reports of the P2 programs. During 1997, the P2 Team and the P2 staff will evaluate existing and proposed P2 performance measures, and determine the frequency, audience, and format of tracking and reporting the measures. Specific performance measures that are being considered to assess P2 progress include:

- P2 Goal Trends- The progress toward the corporate P2 goals may be tracked and reported to SNL senior management in the SNL Corporate Performance Indicators Report, which is currently under development. The waste generation P2 goals can be tracked and reported for each division and/or center.
- Solid Waste Composition - An initial sampling of trash dumpsters at SNL/NM provided a baseline composition of solid waste disposed. Additional samplings could be conducted to determine the effect of recycling and source reduction programs.
- Recycling Percentage - For specific recyclable waste types, the percentage of waste recycled to the total waste generated (recycled + disposed) is currently used to track recycling success.
- P2 Project Results - For Waste Minimization Implementation Center (WMIC) and Return on Investment (ROI) funded P2 projects, the resulting waste reduction and cost savings is being tracked. (See section 3. 9 of this plan for descriptions of these funding sources). Organizations that receive implementation funds are required to submit updates to the P2 staff. The P2 staff consolidates this information at least quarterly.
- AP Percentage--For the EPA-designated products, the percentage of purchases that contain recycled content to the total purchases (in dollars) is determined annually.

3.4 Perform Opportunity Assessments (PPOAs) and Implement Cost Savings Pollution Prevention Projects

The main function of SNL's P2 program is to reduce the generation of pollutants and increase the rate of recycling. Source reduction and recycling goals can only be achieved when P2 projects are aggressively implemented. P2 projects are identified with the help of P2 staff through PPOA's or by line organizations with the help of generator liaisons and ES&H coordinators. In FY 1996 SNL conducted 19 PPOA, identifying many P2 projects which are currently being implemented or considered for implementation. PPOAs and informal consultations continue to be conducted based on specific needs or if requested from line organizations. However, the emphasis at SNL is now on implementing new and previously identified opportunities that have a high return on investment and identifying new P2 opportunities with the help of generator liaisons and ES&H coordinators.

Funds to implement P2 projects come from three sources: 1) Line organization funding, 2) DOE Return on Investment funds, distributed by DOE/AL and 3) WMIC funds (SNL/NM only), distributed by the P2 Team. Each of these is briefly described below.

Line Organization Funding-If a P2 project indicates sufficient cost savings, the line organization may choose to use operational funding to implement the project.

ROI and WMIC Funding - Funds are available to implement P2 projects from DOE's ROI program and WMIC funds (NM only). To be eligible for these funds, the line organization contacts the P2 program staff with a proposed project. The P2 program staff completes the proposal and submits it for either ROI or WMIC funding. Organizations that receive funding are required to track project costs, and subsequent pollutant reduction and cost savings. This information is collected by the P2 program staff and reported to DOE.

3.5 Design Pollution Prevention into New Products, Processes and Facilities

The most opportune time to incorporate P2 into on ongoing operation or a one-time activity is during the design, or project planning phase, of products, processes, and facilities.

Project plans for new operations and activities are subject to an ES&H review process at SNL. This review includes: completion of required National Environmental Policy Act (NEPA) documentation; completion of a Preliminary Hazard Assessment (PHA), and identification of anticipated waste streams. Approval is required to generate low-level mixed waste. ES&H coordinators and generator liaisons are responsible for examining existing and new processes, identifying all pollutants produced, and suggesting alternatives to reduce pollutant generation. The P2 program staff is available, at request, to assist the ES&H coordinators and generator liaisons.

SNL/NM will conduct three PPOAs on non-routine operations in FY 1997. Two of these are Environmental Remediation (ER) projects, while the third is the removal of a decommissioned, contaminated building on site. Each of these projects was selected for participation in the DOE-HQ P2 by Design Pilot Program. Results from this effort will be applied to other ER and Deactivation and Decommissioning (D&D) projects on site, and used to develop standard practices to ensure that P2 is integrated into ER and D&D work practices.

For new construction activities, SNL has published the Campus Design and Development Guidelines to assist architects and engineers during the design or modification of new facilities and infrastructure at the site. These guidelines recommend water conservation, energy conservation and native landscaping as standard practices.

3.6 Develop and Maintain Site Pollution Prevention Programs that Comply with Federal, State and Departmental Directives

The SNL P2 program was designed to comply with all applicable Federal, State regulations, DOE Orders, directives, and guidance, and Executive Orders. This includes regulations, orders, directives and guidance relating to pollution prevention, emission of pollutants into all environmental media, and affirmative procurement. Conflicts in direction, or barriers to implementing P2 are addressed and resolved by interacting with SNL Regulatory Support and Legal organizations. Below is a brief description of some of SNL's P2 programs.

Recycling: SNL currently has processes to recycle the following types of wastes:

- Paper
- Cardboard
- Used Oil
- Coolants
- PCB and non-PCB ballast's and transformers (SNL/NM only)
- Fluorescent lights
- Batteries
- Solvents
- Mercury (SNL/NM only)
- Laboratory glass (SNL/CA only)
- Yard Waste
- Aluminum Cans
- Tires
- Scrap metal
- Lead (SNL/CA only) - Note SNL/NM has a separate lead reuse program, described below.

In August 1996, SNL/NM conducted a sanitary waste composition assessment to determine the potential for increased recycling. One of the key conclusions from the assessment is that 55% of the sanitary waste currently disposed by SNL/NM could be recycled if cost-effective collection processes and markets could be identified or developed. The types of recyclable materials found in the waste include paper, cardboard, plastic, office supplies, packing material, disposable personal protective equipment, wood and construction debris, beverage containers, glass, and aluminum cans. During the next few years, SNL/NM plans to improve and expand recycling programs so that recycling is more convenient and accessible to the line organizations.

Also in 1996, SNL/NM began operation of a new Solid Waste Transfer Facility which has a large untapped capacity for processing recyclable materials. In 1996, SNL/NM initiated a joint effort with Los Alamos National Laboratory (LANL) to cooperate in the collection, processing, marketing, of recyclable paper and share the resultant revenue. After successfully creating a process, the program was expanded with DOE/KAO. During the next few years, efforts to expand the cooperation with other federal and state facilities will continue.

Reuse Programs: SNL currently maintains four reuse programs: Chemical Exchange, Material Exchange, Lead Bank, and Radioactive Source Bank as described below. Note that the Material Exchange programs are described in Section 2.1.8.2.

- At SNL/NM, the Chemical Exchange Program provides an alternative to the disposal of surplus usable chemicals. Generators with excess, unopened chemicals transfer the material to a central storage location. The chemicals are then available free to other SNL/NM organizations. Efforts are underway to expand this program to offer the chemicals to other agencies outside of SNL/NM, such as other DOE and DOD facilities. At SNL/CA, the Waste Management Department, with assistance from the P2 staff, makes every effort to find users for excess, unopened chemicals.
- The Lead Bank was created to reduce the disposal of radioactively contaminated lead and purchase of new lead by providing a supply of excess lead for reuse within SNL/NM. Excess lead in various forms (scraps, bricks, casks) are collected, surveyed for radiological contamination, and transported to a central repository. The lead is made available for reuse to other organizations within SNL/NM. The lead is either reused as-is or recast for specific purposes.
- The Radioactive Source (RS) program reduces the disposal of LLW by collecting, storing and redeploying radioactive sources for reuse. Generators (custodians) in SNL line organizations initiate collection, transportation, and storage of radioactive sources by submitting a Radioactive Source Transfer Request (RSTR) to the RS manager. After the RSTRs are reviewed, the sources are assigned to the Radioactive Source Bank and held in storage until another user is found. The program is in the early implementation stage. Complete implementation is expected by Sept. 1997.
- In addition to and in conjunction with the Material Exchange programs, SNL's P2 program staff are also participating in DOE complex-wide initiatives to develop infrastructures that facilitate the transfer and reuse of certain materials. The materials include high risk, valuable, or one-time materials rather than the routine materials processed through the existing Material Exchange programs.

Affirmative Procurement Program: SNL/NM and SNL/CA are working together to improve SNL's AP practices. The program is described in Section 3.13.

3.7 Develop and Maintain Consistent Generator-Specific Programs

For purposes of the P2 program, the SNL generator is the line organization. As a part of the P2 goal setting process, each line organization at the division or center level, depending on size and activity, is asked annually to develop P2 goals and P2 activities for their organization taking into account their current and anticipated operations, waste generation rates, recycling practices, and affirmative procurement practices. Quarterly, the P2 program staff provide reports to the divisions showing waste generation rates and the division ES&H coordinators are asked to include P2 progress in their self-assessments.

3.8 Reduce Release of Toxic Chemicals

This program element refers to the release of Toxic Chemical Release Inventory (TRI) chemicals regulated by EPCRA. At SNL, the only chemical subject to this regulation, is below threshhold levels. Due to the insignificant releases, SNL will devote its resources, funds, and time on the other P2 program elements.

3.9 Distinguish Pollution Prevention Budget Allocations Through Activity Data Sheets

Pollution prevention at SNL is currently supported by three funding sources: ADS Budget allocations, GSAF at SNL/NM, and DOE ROI funds. Table 2, below shows the anticipated funding levels for SNL.

Table 2. FUNDING FOR SNL P2 PROGRAM

	FY96	FY97	FY98
SNL/NM ADS	$310K	$310K	$318K
SNL/NM ROI	139.8K	$329K	?
SNL/NM GSAF	$595K	$329K	$250K
SNL/CA ADS	$170K	$204K	$209K
SNL/CA ROI	$26.5K	0	?

The ADS budget allocation provides the minimum support for the P2 program at SNL to maintain compliance with federal and state regulations and DOE orders. The scope of work includes reporting, P2 goal development and tracking, and corporate P2 program development.

Since FY95, DOE has provided some funding for implementation of P2 projects with high ROI, cost savings, and waste avoided. For each potential P2 project, SNL submits a proposal including a cost/benefit analysis to DOE. The proposals are evaluated with proposals from other DOE facilities and awarded as DOE feels appropriate. In FY96, SNL/NM implemented five P2 projects with ROI funding and SNL/CA implemented one P2 project with ROI funding. In FY97, SNL/NM implemented 10 P2 projects with ROI funding. SNL will continue to submit proposals as projects are identified.

SNL/NM maintains a GSAF program. The GSAF is a fee assessed to line organizations for the waste they generate. The collected fees are applied to fund pollution prevention projects and for direct P2 service to the line organizations. Collection and disbursement of the funds are tracked through the Waste Minimization Implementation Service Center (WMIC). The P2 Team is responsible for determining the fee structure, developing an annual budget, and projecting anticipated fee collections.

In the next few years, the P2 program staff will be evaluating other potential funding sources, such as landlord funding, full waste recovery chargeback funding, and recycle revenue.

3.10 Analyze Pollution Prevention Costs and Benefits for Use in Decision Making

Pollutant costs are becoming a primary management issue; sound management decisions require a knowledge of pollutant life-cycle costs if decision makers are to properly balance

the benefits of pollution prevention with the cost to continue operations without process improvements.. These costs must include expenditures incurred with the management of pollutants both currently and in the future. Activities related to this element include:

- SNL P2 program staff conducts cost benefit analysis for every P2 opportunity that is identified during a PPOA or informal consultation. These analyses are used to determine if funding and implementation of the P2 opportunity should be pursued.
- SNL is participating in a DOE pilot to determine if a full waste recovery chargeback system should be implemented complex-wide. Beginning in Jan 1997, waste generators receive a mock bill, detailing direct and indirect costs, to collect, manage, store, treat, and dispose of their hazardous and radioactive waste generated during the previous quarter. The mock billing is designed to inform generators of the full cost of waste management in preparation for the transition of waste management funding from DOE's Environmental Management (EM) office to the waste generating or landlord responsible DOE office in 1998.

3.11 Facilitate Pollution Prevention Technology Transfer and Awareness Programs

Communicating with and exchanging ideas with other DOE sites and industry with similar processes provides updated information to each site leverages DOE resources by providing more comprehensive knowledge of P2 opportunities, and reduces duplication of effort. SNL plans to conduct the following activities:

- Continue to foster a working relationship with LANL, and Lawrence Livermore National Laboratory (LNLL) to mutually benefit all sites and efficiently implement similar P2 efforts.
- Create an external SNL P2 HomePage to enhance communication and publicize SNL's P2 efforts. This action will be completed in FY 1997.
- Attend meetings, seminars and/or conferences with DOE P2 coordinators and other P2 professionals, such as the DOE P2 Conference, Defense programs (DP) P2 Workshop, and the National Recycling Coalition Conference. Submit technical papers and presentations to external publications and conferences.

3.12 Develop and Conduct Pollution Prevention Employee Training and Awareness Programs

SNL recognizes that pollution prevention is implemented at the line organization. In order to improve the P2 culture at SNL so that P2 is an integral part of everyone's everyday activities, the P2 program staff and P2 Team will continue to maintain and improve employee communication programs. Planned activities include:

- Update and modify SNL's P2 HomePage
- Submit P2 articles for publication in internal SNL publications.

The purpose of the above communications is to provide waste generation, recycling, and affirmative procurement information, provide updates of progress towards the corporate P2 goals, share success stories and encourage wider application of successful P2 activities, announce actual and potential funding and upcoming events, provide recognition and awards for P2 accomplishments, and to provide updates and progress reports of P2 programs and P2 team activities.

3.13 Modify Procurement Practices to Promote Pollution Prevention

SNL procurement has the ultimate responsibility to modify procurement practices to ensure implementation of affirmative procurement practices to meet SNL's goal of 100% compliance by 1999, and to close the loop of recycling and reuse. An Affirmative Procurement Team (AP Team) was established in 1997 to assist Procurement in this effort. The AP Team consists of representatives from Procurement, the Secretarial Council, Communications, Facilities, and the P2 Staff in New Mexico and California. Planned activities to achieve the 100% goal include:

- Establish a functioning Affirmative Procurement team
- Modify procedures and practices to increase the purchase of products with recovered content (i.e. offer the recycled product as the default choice).
- Modify construction specifications to require the purchase of recycled products.
- Modify stock items obtained through JIT purchases.
- Modify contract language to require the contractor to comply with affirmative procurement requirements.
- Update Recycled Products Guide to include all EPA designated items.

3.14 Integrate Pollution Prevention into Research, Development, Demonstration and Test and Evaluation Projects

At SNL, the process for implementing this element is identical to the element to design P2 into new products, processes, and facilities. See Section 3.5 of this plan.

3.15 Establish consistent DOE Policies and Procedures to Integrate Pollution Prevention

Various DOE guidance documents and directives may inadvertently create barriers to P2 (i.e., security and revenue issues with recycling) The P2 program staff is responsible for notifying and working with DOE to change any policy/direction that conflicts with P2.

3.16 Develop and Implement a Pollution Prevention Outreach and Public Involvement Program

The P2 Team is responsible for developing and implementing the P2 Outreach program. In 1994 and 1995, the P2 Team coordinated Earth Day festivals. In 1996, limited P2 Outreach

activities were conducted. For 1997 and outyears, the P2 Team is developing a plan to increase its outreach efforts. Activities that have been discussed include:

- Use permaculture techniques to develop permanent, no maintenance landscaping. Interact with local groups in the development and promotion of this project.
- Sponsor a Plant a Tree or seed distribution campaign
- Advertise successful SNL P2 efforts and commitments in local news media
- Participate in community Earth Day activities
- Interact with existing SNL organizations that offer presentations to local school and civic groups to include P2 subject material

3.17 Develop a Pollution Prevention Incentives Program

The P2 Team is responsible for developing and implementing P2 incentives program. Currently, SNL/NM through its GSAF program provides discounted fees as an incentive to waste generators to implement P2 in their work processes. Also, for all SNL employees, one of the elements in the job performance evaluations is their efforts towards ES&H issues, which includes P2. Exceptional P2 efforts are noted and can contribute towards an employee's paycheck.

3.18 Promote Regulatory Review and Provide Technical Assistance

To ensure that proposed Federal and State environmental regulations do not inadvertently hinder P2 efforts, the DOE P2 Program Plan tasks DOE to provide technical assistance to those formulating these regulations. SNL will assist in this effort as requested by identifying those areas where existing regulations conflict with pollution prevention, notifying DOE, and, if possible proposing alternative approaches.

During FY96 and FY97, SNL/NM is participating in an effort to negotiate a Title V Air Permit for SNL/NM that incorporates pollution prevention in exchange for operational flexibility. The primary team members includes DOE, City of Albuquerque, EPA, and SNL.

4.0 REPORTING

4.1 Affirmative Procurement Report

DOE requires that each site prepare an annual report detailing their purchases of EPA designated, recycled items during the previous year. Procurement is responsible for tracking purchases of the EPA designated items, and transmitting that information to the P2 staff. The P2 staff complies the information, using DOE's Affirmative Procurement Reporting System (APRS) software, and submits the report. SNL/NM and SNL/CA submit separate reports to DOE/AL.

4.2 DOE Annual Waste Minimization and Pollution Prevention Report

DOE requires that each site prepare an annual report on its P2 accomplishments and waste generation and recycling information. The P2 staff is responsible for collecting and compiling

the information and completing and submitting the report. The report is transmitted to DOE/KAO and DOE/AL for inclusion in the DOE annual report.. Separate reports are submitted for SNL/NM and SNL/CA.

4.3 Permit Report

Per the Resource Conservation and Recovery Act (RCRA) and Hazardous and Solid Waste Amendments (HSWA) permits issued to SNL/CA and SNL/NM, SNL is required to a report the hazardous waste generated, treated, disposed, and minimized by the facility. SNL/NM submits the report biennally by March 1 of odd numbered years to the New Mexico Environmental Department (NMED). SNL/CA submits the report annually in June to the CA Department of Toxic Substances Control. The P2 staff is responsible for providing the waste minimization information for this report.

4.4 Site Environmental Report

Per DOE Order 5400.1, SNL is required to prepare an annual report that describes all environmental releases, environmental monitoring activities, significant environmental compliance programs, and waste management programs. Pollution Prevention is included in this report. The P2 staff are responsible for preparing and submitting the portions of the report relevant to P2.

4.5 Waste Generation and P2 Progress Reports

The P2 staff provides quarterly reports to division ES&H coordinators. These reports summarize the types and quantities of waste generated and recycled during the quarter and present generation and recycling trends.

The P2 staff also provide monthly P2 progress (PTS) reports to DOE, which describe the progress of the P2 programs, cost data, and other information as requested.

Upon completion of the determination of appropriate P2 performance measures, the P2 staff will be responsible to provide the information. It is likely the reports will report on P2 goal progress and trends and cost and waste avoided for P2 projects.

4.6 Annual Waste Minimization Certification

Per the Waste Minimization section of the RCRA and HSWA permits at SNL/NM and SNL/CA, SNL is required to annually certify that it has a program in place "to reduce the volume and toxicity of all hazardous wastes which are generated by the facility's operations". These certifications are due on Dec. 1 for the previous fiscal year. The P2 staff is responsible for completing and submitting this report at SNL/NM to the New Mexico Environment Department. The Waste Management division, with input from the P2 staff, is responsible for completing and submitting this report to the State of California.

5.0 SUMMARY

Table 3 contains the specific that activities that will be conducted for 1997 through 1999 in support of SNL's P2 program. Each of these activities is linked to one of the DOE 18 program activities.

Table 3. SUMMARY OF ACTIVITIES FOR SNLs P2 PROGRAM

ACTIVITY	APPROACH	PLAN REF.	DATE	RESPONSIBLE ORGANIZATION
Establish Senior Management Support	Senior Management will provide the necessary level of personnel, budget, training and materials to meet the P2 objectives. Senior management will commit to corporate P2 goals.	3.1	ongoing	Senior Management
Set Quantitative Reduction and Recycling Goals	Gather input from line organizations and consolidate to review and revise, if necessary, corporate P2 goals	3.2	annually	P2 staff P2 Team
Institute Performance Measures	Determine which performance measures to use, the frequency of tracking and reporting, the distribution of reporting. Implement as soon as determinations made.	3.3	Sept. 30, 1997	P2 staff P2 Team
	Track P2 project results at least quarterly by collecting pollutant reduction and cost savings for P2 funded projects from line organizations for the duration of the project	3.3	at least quarterly	Line organizations P2 staff
Conduct PPOAs & Implement P2 Projects	Use DOE guidance and a team approach	3.4	as needed or requested	P2 staff
	The P2 Team will distribute GSAF funding for P2 projects by using the established guidance and ranking system to evaluate and select P2 projects	3.4	quarterly	P2 Team

ACTIVITY	APPROACH	PLAN REF.	DATE	RESPONSIBLE ORGANIZATION
	Using the established guidance and ranking system the P2 staff will prepare & submit proposals for DOE ROI funding	3.4	as requested	P2 Staff
Design P2 into new products, processes and facilities	Continue to identify reduction opportunities through NEPA, PHAs, PPOAs, ES&H coordinator and generator liaison interface. Use Campus Design and Development Guidelines for facilities design and infrastructure	3.5	ongoing	P2 staff ES&H coordinators generator liaisons
Develop and Maintain a Compliant P2 program	Implement P2 Plan, and interact with Regulatory Support	3.6	ongoing	P2 staff, P2 Team ES&H coordinators,
	Implement an improved paper and cardboard recycling process at SNL/NM	3.6	Dec. 31, 1997	P2 staff waste operations
	Expand recycling cooperative with other agencies	3.6	Dec. 31, 1999	P2 staff
	Expand Chemical Exchange to other agencies	3.6	Dec. 31, 1999	P2 staff
	Complete implementation of Rad Source Bank	3.6	Sept. 30, 1997	P2 Staff
	Develop network for material exchange within DOE	3.6	Dec. 31, 1999	P2 Staff
Develop Generator-Specific P2 Programs	Using the SNL goal setting process, identify pollutant reduction activities for the organization. Track P2 progress in self assessment process.	3.7	annually	ES&H coordinators

ACTIVITY	APPROACH	PLAN REF.	DATE	RESPONSIBLE ORGANIZATION
Distinguish P2 Budget allocations through ADSs	Submit ADS budget proposals and ROI proposals	3.9	annually or as requested	P2 Staff
	Prepare GSAF budget	3.9	annually	P2 Team
Distinguish P2 Budget allocations through ADSs	Evaluate potential funding sources in outyears	3.9	ongoing	P2 Staff
Analyze P2 Costs & Benefits	Evaluate economic and environmental cost accounting methods for use at SNL in making sound business decisions	3.10	ongoing	P2 Staff
	Interface with project estimators/budget analysts to identify the true waste management costs for mock billing and full waste recovery chargeback system.	3.10	FY 1999	P2 Staff
Facilitate P2 Tech Transfer & Awareness Programs	Create and external P2 HomePage. Submit papers & presentations for external publications & conferences.	3.11	9/97	P2 Staff
Develop P2 Employee Training & Awareness Programs	Update/Modify SNL's internal P2 HomePage. Use the HomePage as the primary communication vehicle. Respond to user feedback. Submit P2 articles for internal publication.	3.12	ongoing	P2 Staff
Modify procurement practices to promote P2	Modify construction specifications, JIT stock items, and contract language. Update Recycled Products Catalog.	3.13	9/98	Procurement AP Team

ACTIVITY	APPROACH	PLAN REF.	DATE	RESPONSIBLE ORGANIZATION
Develop and Implement a P2 Outreach and Public Involvement Program	Use Line and P2 program input to develop P2 outreach activities	3.16	ongoing	P2 Team
Promote Regulatory Review & Provide Technical Assistance	Participate in team effort to negotiate P2 into Title V Air Permit	3.18	9/98 permit expected	P2 staff
Prepare reports	Submit Affirmative Procurement Report	4.1	annually by 12/31	P2 Staff
Prepare Reports	Submit Waste Generation and Waste Minimization Progress Report	4.2	annually by 3/31/97	P2 Staff
	Submit Waste Min portions of RCRA/HWSA Report	4.3	biennially by 3/1 (NM) annually by June (CA)	P2 Staff
	Submit P2 section of Site Environmental Report	4.4	annually by 4/30	P2 Staff
	Submit internal Waste Generation and P2 Progress Reports	4.5	monthly or quarterly	P2 Staff
	Submit P2 PTS Report	4.5	monthly	P2 Staff

ACTIVITY	APPROACH	PLAN REF.	DATE	RESPONSIBLE ORGANIZATION
	Submit Annual Waste Minimization Certification	4.6	annually by 12/1	P2 Staff

6.0 REFERENCES

DOE, 1988, *General Environmental Protection Program, DOE Order 5400.1*, U. S. Department of Energy, Washington, D. C.

DOE, 1996a, *Pollution Prevention Program Plan*, (DOE/S-0118), U. S. Department of Energy, Washington, D. C.

DOE, 1996b, *U. S. DOE Affirmative Procurement Program for Products Containing Recovered Materials*, U. S. Department of Energy, Washington, D. C.

DOE, 1997, *Guidance for Preparation of Site Waste Minimization and Pollution Prevention Awareness Plans*, U. S. Department of Energy, Washington, D. C.

DOE-AL, 1994, *Waste Minimization/Pollution Prevention Management and Action Plan, Albuquerque Operations Office*, Waste Management Division, Albuquerque, NM

DOE-KAO, 1995, *U. S. DOE, Kirtland Area Office Pollution Prevention Policy Statement*

Emergency Planning and Community Right-to-Know Act, as amended, 42 USC 11013, 11028, et seq

Executive Order 12856, 1993, Federal Agency Compliance with Right-to-Know Laws and Pollution Prevention Requirements, Federal Register, Vol. 58, pp. 41981, (August)

Executive Order 12873, 1993, Federal Acquisition, Recycling and Waste Prevention, Federal Register, Vol. 58, 54911, (October)

Executive Order 12902, 1993, Energy Efficiency and Water Conservation at Federal Facilities, Federal Register, Vol. 58, pp. 11463, (March)

Federal Facility Compliance Act of 1992, as amended, Public Law 102

Pollution Prevention Act of 1990, as amended, 42 USC 13102 et seq.

Resource Conservation and Recovery Act of 1976, as amended, 42 USC 6901 et seq.

GLOSSARY OF TERMS

Activity Data Sheets - Budget documents tat contain the essential scope, schedule, cost, and management information, prepared by Operations Offices to provide input to the budgeting process.

Affirmative Procurement Program - A program that ensures that items composed of recovered materials will be purchased to the maximum extent practicable, consistent with Federal Law and procurement regulations (RCRA, Section 6002).

Disposal - Emplacement of waste in a manner designed to isolate it from the biosphere, with no intention of retrieval for the foreseeable future, an that requires deliberate action to regain access to the waste.

DOE Orders - Internal requirements that establish DOE policy and procedures for compliance with applicable laws and regulations

Environmental Restoration - Cleanup and restoration of sites contaminated with radioactive and/or hazardous substances during past production, accidental releases, or disposal activities

Hazardous Waste - The statuary definition found in section 1004(5) of RCRA (42 USC 6903) is: a solid waste, or combination of wastes that because of its quantity, concentration, or physical, chemical, or infectious characteristics, may (a) cause or significantly contribute to an increase in mortality or in serious irreversible, or incapacitating reversible illnesses, or (b) pose a substantial present of potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed. Criteria for identification and listing of hazardous wastes are found in Title 40 of the Federal Code of Regulations, Part 261.

Life Cycle - The stages of a product's, process's or package's life, beginning with raw material acquisition, continuing through processing, materials manufacture, product fabrication, and use, and concluding with any variety of waste management options, including recycling.

Low-level radioactive waste - Radioactive waste not classified as high-level, transuranic waste, spent nuclear fuel, or by-product material in accordance with DOE Order 5820.2A

Mixed Waste - Waste that contains both radioactive and hazardous components as defined by the Atomic Energy Act, TSCA and RCRA. Mixed waste is further defined as transuranic mixed, low-level mixed and TSCA-regulated mixed.

Non-Routine Waste - (or Cleanup/Stabilization Waste) This type of waste emcompasses a complex range of activities including environmental restoration of contaminated media (soil, groundwater, surface water, sediments, etc.); stabilization of nuclear and nonnuclear (chemical) materials; and deactivation and decommissioning (including decontamination) of facilities. Non-routine waste consists of one-time operations produced from environmental restoration program activities associated with retrieval and remediation operations, "legacy waste;, and wastes from decontamination and decommissioning/transition operations. It also includes all TSCA regulated wastes, such as PCB contaminated fluids and equipment, and asbestos. Non-routine waste is a direct result of past operations and activities, rather than a current process. Newly generated wastes that are produced during cleanup/stabilization operations are considered secondary wastes, and are separately accounted for as a "routine" waste. This secondary waste usually results from common activities such as handling, sampling, treatment, repackaging, shipping, etc.

Pollution Prevention - The use of materials, processes, and practices that reduce or eliminate the generation and release of pollutants, contaminants, hazardous substances, and waste into land, water, and air. For DOE, this includes recycling.

Pollution Prevention Opportunity Assessment - Evaluation and appraisal of a process, activity, or operation as a way to identify potential waste minimization opportunities.

Recycling - Recycling techniques are characterized as use, reuse and reclamation. Use or reuse involves the return of a potential waste material wither to the originating process as a substitute for an input material or to another process as an input material. Reclamation is the recovery of a useful or valuable material from a waste stream. Recycling allows potential waste materials to be put to a beneficial use instead of going to treatment, storage, or disposal.

Routine Waste - Normal operations waste produced from any type of production, analytical, and/or research and development laboratory operations; treatment, storage, or disposal operations; "work-for-others;" or any periodic and recurring work that is considered ongoing. The term "normal operations refers to the type of ongoing processes (e.g. production) not the specific activity that produced the waste. Periodic laboratory or facility clean-outs which occur as a result of these processes are also considered normal operations.

Sanitary Waste - Wastes, such as garbage, that are generated by normal housekeeping activities and are not hazardous or radioactive.

Source Reduction - The elimination or reduction of waste generation at the source, Source reduction activities and techniques include substitution of less hazardous materials, process optimization or modification, technology changes and administrative changes (inventory control), and housekeeping practices (waste

segregation). Source reduction results in reducing or eliminating potential material from exiting a process.

ACRONYMS

ADS - Activity Data Sheet
AP - Affirmative Procurement
APRS - Affirmative Procurement Reporting System
CIS - Chemical Inventory System
CY - Calendar Year
DOD - Department of Defense
DOE - Department of Energy
DOE/AL - Department of Energy, Albuquerque Operations Office
DOE-HQ - Department of Energy, Headquarters
DOE/KAO - Department of Energy, Kirtland Area Office
DP - Defense Programs
EPA - Environmental Protection Agency
EPCRA - Emergency Planning and Community Right to Know Act
E. O. - Executive Order
EM - Environmental Management
ES&H - Environmental Safety and Health
ER - Environmental Remediation
FY - Fiscal Year
GSAF - Generator Set Aside Fee
HSWA - Hazardous and Solid Waste Amendments
HW - Hazardous Waste
JIT - Just-in-Time (Procurement)
LANL - Los Alamos National Laboratory
LIWG - Line Implementation Working Group
LLNL - Lawrence Livermore National Laboratory
LLW - Low-level Radioactive Waste
LLMW - Low-level Radioactive Mixed Waste
MSDS - Material Safety Data Sheet
NEPA - National Environmental Policy Act
NMED - New Mexico Environmental Department
P2 - Pollution Prevention
PCB - Polychlorinated Biphenyl
PHA - Preliminary Hazard Assessment
PPOA - Pollution Prevention Opportunity Assessment
RCRA - Resource Conservation and recovery Act
R&D - Research and Development
ROI - Return on Investment
RS - Radioactive Source
RSRS - Radioactive Source Transfer Request

SNL - Sandia National Laboratories
SNL/CA - Sandia National Laboratories, California operations
SNL/NM - Sandia National Laboratories, New Mexico operations
SW - Sanitary Waste
TRI - Toxic Chemical Reduction Inventory
TRU - Transuranic Waste
USNRC - United States Nuclear Regulatory Commission
WMIC - Waste Minimization Implementation Center

APPENDIX A

DRIVERS FOR POLLUTION PREVENTION/WASTE MINIMIZATION

FEDERAL LAWS

Pollution Prevention Act of 1990 provides that each owner or operator add source reduction and recycling report to the annual release report, as mandated by EPCRA. The Act also establishes a national policy, and introduces the pollution prevention hierarchy to prevent pollution at the source whenever feasible, followed by reuse/recycle, then treatment, and disposal only as a last resort. Establishes an EPA pollution prevention office and national pollution prevention program.

Clean Water Act (CWA) Requires industrial stormwater discharge facilities to have an onsite pollution prevention plan. Also directs EPA to promote the inclusion of pollution prevention technologies in industrial effluent standards, and promote source reduction in industrial water effluent guidelines.

Clean Air Act (CAA) Directs EPA to consider pollution prevention technologies when selecting maximum Achievable Control Technology (MACT).

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) addresses the cleanup of inactive hazardous waste sites and accidental spills/releases, establishes the Superfund for use in cleanups, establishes the National Priorities List, and makes the generators of hazardous wastes potentially responsible for up to three times the cost of remediation.

Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) was enacted as Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) and is frequently referred to as SARA Title III. EPCRA requires owners and operators of applicable facilities to annually submit toxic chemical-release inventories to the Environmental Protection Agency (EPA). Since the enactment of EPCRA in 1986, the EPA has provided for the optional reporting of waste minimization efforts by owners and operators in their annual submissions of toxic chemical release inventories.

Energy Policy Act of 1992 (public law 102-486) requires the Secretary of Energy to work with other federal agencies to significantly reduce the use of energy and to reduce the related environmental impacts, by promoting energy use efficiency and the use of renewable energy technologies.

Federal Facility Compliance Act of 1992 (FFCA) waives sovereign immunity for Federal facilities. The FFCA subjects them to civil and to criminal liabilities. The FFCA amends the Resource Conservation and Recovery Act (RCRA) to require that the Department of Energy (DOE) prepare facility plans to provide for the development of treatment capacities and technologies to treat all (of each facility's) mixed wastes by the standards that are promulgated in RCRA.

Federal Non-Nuclear Research and Development Act of 1974 (as amended) directs the Energy Research and Development Administration and, subsequently the Department of Energy, to conduct research, development, and demonstration of waste technologies.

National Environmental Policy Act (NEPA) requires the consideration of options to reduce environmental impacts, including pollution prevention for governmental projects.

Occupational Safety and Health Act (OSHA) provides worker protection from chemical hazards.

Resource Conservation and Recovery Act (RCRA) requires manifest reporters to certify that a program is in place to reduce volume and toxicity of waste, and that methods used for TSD are the best available methods which minimize present and future threat to human health and the environment. Establishes a cradle-to-grave management framework and a regulatory system for solid waste.

Toxic Substances Control Act (TSCA) requires pre-manufacturing notification, testing of new chemicals, and either banning or regulating the production of specific chemicals.

EXECUTIVE ORDERS

Executive Order 12088, Pollution Prevention at Federal Facilities makes the head of each Federal agency responsible for ensuring that all necessary action is taken for the prevention of environmental pollution at Federal facilities and for activities that are under the control of that agency.

Executive Order 12843, Procurement Requirements and Policies for Federal Agencies for Ozone-Depleting Substances requires Federal agencies to implement cost-effective programs to minimize the procurement of materials and substances that contribute to the depletion of stratospheric ozone and to give preference to the procurement of alternative chemicals, products, and manufacturing processes that reduce the overall risks to human health and the environment by lessening the depletion of ozone in the upper atmosphere.

Executive Order 12856, Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements requires Federal agencies to conduct their facility management in such a way as to reduce toxins entering waste streams; to reduce releases to the environment through source reduction; to report toxic-chemicals entering the waste stream and releases to the environment; to improve emergency planning, response and accident notification; to encourage markets for clean technologies and safe alternatives to hazardous substance and toxic-chemicals; and to set waste reduction goals.

Executive Order 12873, Federal Acquisition, Recycling, and Waste Prevention requires Federal agencies to develop and implement affirmative procurement programs in accordance with RCRA and also set minimum content standards for printing and writing paper. In addition, each Federal agency must establish a goal for solid waste prevention and a goal for recycling to be achieved by the end of 1995.

DOE ORDERS

DOE 4700.1, Project Management System establishes the project management system that DOE design projects must follow. It includes numerous pollution prevention concepts and requirements. This order limits contamination of facilities, provides design features that ease decontamination, and incorporates features that promote the reuse of facilities.

DOE 5400.1, General Environmental Protection Program establishes environmental protection program requirements and responsibilities, and institutes the requirements for opportunity assessments. This Order requires Waste Minimization Program Plans, an Annual Waste Reduction/Minimization Report, and a Pollution Prevention Awareness Program.

DOE 5400.3, Hazardous and Radioactive Mixed Waste Program implements the RCRA requirements into DOE environmental programs.

DOE 5820.2A, Radioactive Waste Management establishes policies, guidelines, and radioactive, mixed waste and contaminated facilities requirements. It requires Waste Management Plans with

indication of actions to minimize hazardous waste generation and establish an annual waste reduction report.

DOE 6430.1A, General Design Criteria, establishes the general design criteria that DOE design projects must satisfy. It includes numerous pollution prevention concepts and requirements. Requires that process systems minimize the production of wastes at the source and minimize the mixing of radioactive and nonradioactive hazardous waste.

California Drivers

California Hazardous Waste Reduction and Management Review Act of 1989 requires a source evaluation summary, specifying the source reduction measures that will be implemented.

California Solid Waste Management, Source Reduction, Recycling, Composting, and Market Development Act of 1989 requires of 5% per year in solid waste generated until 50% reduction is realized (or the maximum amount that is technologically and economically feasible is reduced or recycled).

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